

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A method for processing during a video phone communication between a plurality of participants using handheld video phone systems an image taken by a camera of a first handheld video phone system for playback on a display of at least one other handheld video phone system connected in a network, each handheld video phone system having an image processor, the method comprising acts of:

providing the image containing at least a portion of a head of a user of the video phone system to ~~the~~ an image processor selected from one of the first and at least one other handheld video phone systems and a server connected in the network;

estimating an orientation of said head in said image using a pattern recognition technique, said pattern recognition technique comprises a classification technique;

if the orientation of said head is estimated to not be frontal,

computing a three dimensional model of a face surface of said user using a computer vision technique based on the result of the classification technique; and

adjusting an orientation of said three dimensional face surface model to provide a frontal view,

wherein the camera and the display of the handheld video phone system are

integrated into a single unit and wherein the camera is oriented in the single unit to capture the portion of the head of the user during use of the handheld video phone system.

2. (Previously presented) The method of claim 1, wherein said computing act further comprises an act of using a symmetric face assumption to obtain a complete three dimensional face surface model for a profile view.

3. (Previously presented) The method of claim 1, wherein said computing act further comprises an act of employing a structure from motion technique to obtain said three dimensional face surface model.

4. (Canceled)

5. (Previously presented) The method of claim 1, wherein said computing act generates a morphable three dimensional model.

6. (Previously presented) The method of claim 1, further comprising an act of mapping said three dimensional face surface model having an adjusted orientation to a two dimensional space.

7. (Previously presented) The method of claim 1, further comprising an act of transmitting

said adjusted image to a remote user.

8. (Previously presented) The method of claim 1, further comprising an act of presenting said adjusted image to a local user.

9. (Currently amended) An image processor for processing during a video phone communication between a plurality of participants using handheld video phone systems an image taken by a camera of a first handheld video phone system for playback on a display of at least one other handheld video phone system connected in a network, the image processor comprising:

a memory for storing an image containing at least a portion of a head of a user of the handheld video phone system; and

a head pose corrector provided on one of the first and at least one other handheld video phone systems and a server connected in on the network that

estimates an orientation of said head in said image using a pattern recognition technique, said pattern recognition technique comprises a classification technique if the orientation of said head is estimated to not be frontal;

computes a three dimensional model of a face surface of said user using a computer vision technique based on the result of the classification technique; and

adjusts an orientation of said three dimensional face surface model to provide a frontal view,

wherein the camera and the display of the handheld video phone system are integrated into a single unit and wherein the camera is oriented in the single unit to capture the portion of the head of the user during use of the handheld video phone system.

10. (Original) The image processor of claim 9, wherein said head pose corrector is further configured to use a symmetric face assumption to obtain a complete three dimensional face surface model for a profile view.

11. (Original) The image processor of claim 9, wherein said head pose corrector is further configured to employ a structure from motion technique to obtain said three dimensional face surface model.

12. (Canceled)

13. (Original) The image processor of claim 9, wherein said three dimensional face surface model is a morphable three dimensional model.

14. (Original) The image processor of claim 9, wherein said head pose corrector is further configured to map said three dimensional face surface model having an adjusted orientation to a two dimensional modified image.

15. (Original) The image processor of claim 14, wherein said two dimensional modified image is transmitted to a remote user.

16. (Original) The image processor of claim 14, wherein said two dimensional modified image is presented to a local user.

17. (Currently amended) A video phone system having an image processor for processing during a video phone communication between a plurality of participants using handheld video phone systems an image taken by a camera of a first handheld video phone system for playback on a display of at least one other handheld video phone system connected in a network, the system comprising:

a memory for storing an image containing at least a portion of a head of the video phone system user; and

a head pose corrector provided on one of the first and at least one other handheld video phone systems and a server connected in on the network that

estimates an orientation of said head in said image using a pattern recognition technique, said pattern recognition technique comprises a classification technique if the orientation of said head is estimated to not be frontal computes a three dimensional model of a face surface of said video phone system user using a computer vision technique based on the result of the classification technique; and

adjusts an orientation of said three dimensional face surface model to provide a

frontal view,

wherein the camera and the display of the handheld video phone system are integrated into a single unit and wherein the camera is oriented in the single unit to capture the portion of the head of the user during use of the handheld video phone system.

18. (Original) The video phone system of claim 17, wherein said head pose corrector is further configured to use a symmetric face assumption to obtain a complete three dimensional face surface model for a profile view.

19. (Original) The video phone system of claim 17, wherein said head pose corrector is further configured to employ a structure from motion technique to obtain said three dimensional face surface model.

20. (Canceled)

21. (Original) The video phone system of claim 17, wherein said head pose corrector is further configured to map said three dimensional face surface model having an adjusted orientation to a two dimensional modified image.

22. (Original) The video phone system of claim 21, wherein said two dimensional modified image is transmitted to a remote user.

23. (Original) The video phone system of claim 21, wherein said two dimensional modified image is presented to a local user.